

Dr.-Ing. Ahmed ELAWAMRY

PERSONAL DATA

PLACE AND DATE OF BIRTH: Egypt | 14 June 1986
ADDRESS: Alte Schanze 83, 47057 Duisburg, Germany
PHONE: +49 (0)1788453887
EMAIL: ahmed.elawamry@id4us.de

RESEARCH INTERESTS

Chipped and Chipless RFID Systems, Electronic Circuits Design, Radar Systems, Power Line Communications, RF-Fronted, Wireless Sensor Networks.

INDUSTRIAL EXPERIENCE

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|--------------------------|---|
| MAY 2016- <i>Current</i> | Protocol and System Engineer at ID4US GMBH, Duisburg, Germany <ul style="list-style-type: none">Design a regulation compliant (<i>ETSI</i>) multi-tag identification scheme for the chipless RFID system based on novel indoor radar techniques.Design a suitable hardware (digital and RF circuits, and PCB) for the RFID reader in order to meet several applications.Design the associated signal processing techniques at the reader side and implement them on a software defined radio platform. |
| AUG 2008-FEB 2014 | Lecturer Assistant at THE FACULTY OF ENGINEERING, Benha, Egypt <ul style="list-style-type: none"><u>Teaching</u>: i) Microelectronics, ii) Design of electronic circuits, iii) Measurements and instruments, iv) Communication systems, v) Signals and systems, vi) Real time operations, vii) Microcontroller based system, and viii) C++ programming language.<u>Graduation Project Supervision</u>: i) Radio FM jamming system, ii) Power Line channel emulator, iii) Automatic meter reading, iv) Helicopter tracking system (GSM, GPS modules), v) Quad-Copter autopilot system, and vi) WSN using Zigbee protocol. |
| SEPT 2013-FEB 2014 | Researcher at THE AMERICAN UNIVERSITY IN CAIRO, CENTER OF NANO-ELECTRONICS & DEVICES (CND), Egypt <ul style="list-style-type: none">Model the Through Silicon Via (TSV) and the coupling between the TSVs to be taken into account at MentorGraphics' CAD tool.Implement the simulations using Q3D EM tool in order to extract the coupling information. |
| MAY 2012-SEPT 2013 | Protocol Designer at the R&D Department at ORANGE LABS, Egypt |

- Design a smart meter oriented routing protocol to perform better power line communications (narrow-band).
- Implement the simulations including the MAC layer using OPNET 14.5 simulation tool.
- Implement the routing protocol on ST7590 power line modem and the processing is performed using STM32 microcontroller.

DEC 2008-MAY 2012 | Hardware and System Design at the R&D Department at ELSEWEDY-ELECTROMETER, Egypt

- Design a standard compliant circuit and PCB to the smart meter for north America region.
- Automatic Meter Reading (AMR) implementation, single phase and three-phase.
- RFID prepaid meter design.
- Design of Switched Mode Power Supply (SMPS).
- Build up the production line for the smart meter in Mexico.

EDUCATION

DECEMBER 2016 | Ph.D. in ELECTRICAL ENGINEERING, **Institute of Digital Signal Processing, Duisburg-Essen University**, Duisburg, Germany
 Thesis: “Realized Chipless RFID: Protocol, Encoding, and System Latency” | Advisor: Prof. Dr.- Ing. Thomas Kaiser
 GRADE: 1.0

AUGUST 2013 | M.Sc. in ELECTRICAL ENGINEERING, **Faculty of Engineering, Benha University**, Benha, Egypt
 Thesis: “Enhanced Ad-hoc Routing Protocol Over Electrical Power Lines” | Advisor: Prof. Salwa El-Ramley
 GPA: 4.0/4.0

JULY 2008 | B.Sc. in ELECTRONICS AND COMMUNICATION ENGINEERING, **Faculty of Engineering, Benha University**, Benha, Egypt
 Thesis: “Design and Implementation of a Frequency Hopping Spread Spectrum System” | Advisor: Dr. Ayman H. Mostafa
 GRADUATION PROJECT: 4.0/4.0
 OVERALL: 85% | Ranked 1/100

LANGUAGES

ENGLISH: Very Good
 ARABIC: Mother-Tongue
 GERMAN: Basic Knowledge

COMPUTER SKILLS

1. Technical:

- MATLAB (M-files and Simulink)
- OrCAD (Capture CIS, PCB Editor, and Gerber tools)

- Opnet 14.5 (network simulator)
 - NS-3 (network simulator)
 - Micro-controller based system assembly language and embedded C
 - Keil ARM tool chain
 - C++ programming
 - Python
2. Documentation:
- L^AT_EX
 - Excel
 - Word
 - PowerPoint
 - Microsoft Visio

INDUSTRIAL INTERNSHIP

1. MSCC (Maadi Satellite Communication Centre):
 - Satellite Sector.
 - The training concern on satellite communication between ground station and Satellites like INTELSAT, VSAT and INMARSAT.
2. KATRON (R&D Department):
 - TV production sector.
 - The training concern on the production & maintainece of TV.
 - PCB (single layer and multilayer) production.
3. Quicktell (R&D Department):
 - Hardware and Software of fixed wireless terminal and phones.

INTERESTS AND ACTIVITIES

Technology, Open-Source, Programming, Electronic Circuits Design
 Paradoxes in Decision Making, Psychoanalysis, Behavioral Finance
 Football, Traveling.

SCIENTIFIC PUBLICATIONS

- **Journal Papers**

- [1] A. El-Awamry, M. Khaliel, A. Fawky and T. Kaiser, "Adaptive Spectrum Scanning Techniques for Reducing the Identification Time of the Frequency Coded Chipless RFID System," Transactions on Emerging Telecommunications Technologies (2017).
- [2] M. Khaliel, A. El-Awamry, A. Fawky and T. Kaiser, "A Novel Design Approach for Co/Cross-Polarizing Chipless RFID Tags of High Coding Capacity," IEEE Journal of Radio Frequency Identification, Online ISSN: 2469-7281, 2017.

- [3] M. El-Hadidy, A. El-Awamry, A. Fawky, M. Khaliel and T. Kaiser, "Real-World Testbed for Multi-Tag UWB Chipless RFID System based on a Novel Collision Avoidance MAC Protocol," *Transactions on Emerging Telecommunications Technologies* (Wiley), 2016, pp. 1-8.
- [4] Elawamry A.A., Hassan A.M., Elramly S. (2014) Smart-Metering-Oriented Routing Protocol over Power Line Channel. In: Swiątek J., Grzech A., Swiątek P., Tomczak J. (eds) *Advances in Systems Science. Advances in Intelligent Systems and Computing*, vol 240. Springer, Cham

• **Conference Papers**

- [1] A. El-Awamry, M. Khaliel, A. Fawky and T. Kaiser, "A Novel Multi-Tag Identification Technique for Frequency Coded Chipless RFID Systems based on Look-Up-Table Approach," 2017 11th European Conference on Antennas and Propagation (EuCAP), Paris, 2017, pp. 1-5.
- [2] A. El-Awamry, A. Fawky, M. Khaliel and T. Kaiser, "A Novel Adaptive Spectrum Scanning Technique for Reducing the Identification Time of the UWB Chipless RFID System," 14th IEEE International Conference on Networking, Sensing and Control, Calabria, Italy, 2017, pp. 1-6.
- [3] M. Khaliel, A. El-Awamry, A. Fawky and T. Kaiser, "Long Reading Range Chipless RFID System Based on Rflectarray Antennas," 2017 11th European Conference on Antennas and Propagation (EuCAP), Paris, 2017, pp. 1-5.
- [4] A. Fawky, M. Khaliel, A. El-Awamry and T. Kaiser, "Frequency Coded Chipless RFID Tag Localization using Multiple Antennas," 2017 11th European Conference on Antennas and Propagation (EuCAP), Paris, 2017, pp. 1-5.
- [5] M. Khaliel, A. Fawky, A. El-Awamry, A. Mahmoud and T. Kaiser, "Printable, High Coding Capacity Chipless RFID Tags for Low Cost Item Tagging," 14th IEEE International Conference on Networking, Sensing and Control, Calabria, Italy, 2017, pp. 1-6.
- [6] A. Fawky, A. El-Awamry, M. Khaliel and T. Kaiser, "Novel Notch Detection Techniques for Frequency Coded Chipless RFID," 14th IEEE International Conference on Networking, Sensing and Control, Calabria, Italy, 2017, pp. 1-6.
- [7] M. El-Hadidy, A. El-Awamry, A. Fawky, M. Khaliel and T. Kaiser, "A Novel Collision Avoidance MAC Protocol for Multi-Tag UWB Chipless RFID Systems based on Notch Position Modulation," 2015 9th European Conference on Antennas and Propagation (EuCAP), Lisbon, 2015, pp. 1-5.
- [8] A. El-Awamry, M. Khaliel, A. Fawky, M. El-Hadidy and T. Kaiser, "Novel Adaptive Sliding Window Algorithm Reducing Latency for Multi-Tag Chipless RFID Systems," Radio Science Meeting (Joint with AP-S Symposium), 2015 USNC-URSI, Vancouver, BC, Canada, 2015, pp. 206-206.
- [9] A. El-Awamry, A. Fawky, M. El-Hadidy and T. Kaiser, "Smart Notch Detection Techniques for Robust Frequency Coded Chipless RFID Systems," 2015 9th European Conference on Antennas and Propagation (EuCAP), Lisbon, 2015, pp. 1-5.
- [10] A. Fawky, M. Khaliel, A. El-Awamry, M. El-Hadidy and T. Kaiser, "Novel Pseudo-Noise Coded Chipless RFID System for Clutter Removal and Tag Detection," 2015 IEEE International Conference on RFID (RFID), San Diego, CA, 2015, pp. 100-104.
- [11] A. El-Awamry, M. Khaliel, A. Fawky, M. El-Hadidy and T. Kaiser, "Novel Notch Modulation Algorithm for Enhancing the Chipless RFID Tags Coding Capacity," 2015 IEEE International Conference on RFID (RFID), San Diego, CA, 2015, pp. 25-31.

- [12] M. Khaliel, A. El-Awamry, A. Fawky, M. El-Hadidy and T. Kaiser, "A Novel Co/Cross-polarizing Chipless RFID Tags for High Coding Capacity and Robust Detection," 2015 IEEE International Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting, Vancouver, BC, 2015, pp. 159-160.
 - [13] Ahmed A. Elawamry, Eslam Yahya and Yahyea Ismail, "Enhanced Ad Hoc Routing Protocol for Power Line Communications," in International Conference on Industry Academia Collaboration (IAC 2014), Egypt, 2014, pp. 1-9.
 - [14] A. Elawamry, A. ElSanhoury and A. M. Hassan, "Low-complexity routing algorithm for smart metering on PLC," 2013 International Conference on Computer Applications Technology (ICCAT), Sousse, 2013, pp. 1-2.
- **Organized IEEE Workshops**
 - [1] "Chipless RFID Future and Challenges," 2015 9th European Conference on Antennas and Propagation (EuCAP), Lisbon, 2015.
 - [2] "Chipless RFID System and Testbed: Reader and Tag Antennas, Reader and Tag Design, Multi-Tag Scenarios, Modulation, Clutter Effects and Channel Estimation, Signaling and Real-world Testbed," Radio Science Meeting (Joint with AP-S Symposium), 2015 USNC-URSI, Vancouver, BC, Canada, 2015.
- **Books**
 1. Ahmed Elawamry, "Enhanced Ad-Hoc Routing Protocol over Electrical Power Lines" September 2016, ISBN (978-3-659-64240-1).
- **Awards**
 1. Awarded a three year Deutscher Akademischer Austauschdienst (DAAD) PhD. student scholarship under the Deutsch-Arabische Forschungspartnerschaft program grants in ID4EGYPT Project.
 2. Awarded a Doctoral Dissertation Fellowship (DDF) from Duisburg-Essen University, Institute of Digital Signal Processing to complete the dissertation within the 2016–16 academic year by devoting full-time effort to research and writing.
 3. The paper "A Novel Collision Avoidance MAC Protocol for Multi-Tag UWB Chipless RFID Systems based on Notch Position Modulation," is nominated for the **best student paper award** at 2015 9th European Conference on Antennas and Propagation (EuCAP) conference.
 4. The paper "Long Reading Range Chipless RFID System Based on Rflectarray Antennas," is nominated for the **best student paper award** at 2017 11th European Conference on Antennas and Propagation (EuCAP) conference.
 5. The **best project in Egypt** at the Egyptian Engineering Day 2014 (EED2014) at the field of smart metering oriented application.

REFERENCES

1. Prof. Dr.-Ing. Thomas Kaiser
Head of the institute of Digital Signal Processing, Duisburg-Essen University, Germany.
CEO of ID4us GmbH
Email: thomas.kaiser@uni-due.de
2. Prof. Dr.-Ing. Han Vinck
Full professor in Digital Communications at the University of Duisburg-Essen, Germany
IEEE fellow for "Contributions to Coding Techniques"
Email: han.vinck@uni-due.de

3. Prof. Dr.-Ing. Klaus Solbach
Senior Professor for RF Technology the institute of Digital Signal Processing, Duisburg-Essen University, Germany.
Member in the consultancy committee at ID4us GmbH company.
Email: klaus.solbach@id4us.de
4. Prof. Hadia El-Hennawy
Faculty of Engineering, Ainshams University, Egypt
IEEE Egypt Section Vice-Chair and Prev. Dean, Faculty of Engineering Ainshams University
Email: helhennawy@ieee.org
5. Prof. Ghada Mohamed Amer
Faculty of Engineering, Benha University, Egypt
Vice President the Arab Science and Technology Foundation (ASTF), and Head of Electrical Engineering Department
Email: ghada.amer@bhit.bu.edu.eg
6. Prof. Abdelhalim Zekry
Professor of electronics at faculty of Engineering, Ain Shams University, Egypt
Email: abdelhalim_zekry@eng.asu.edu.eg
7. Dr. Ayman Moustafa
Head of LCI team at the R&D of Orange labs, Cairo.
Email: ayman.hassan@orange.com
8. Dr. Eslam Yahya
Post Doctoral Researcher, Electrosience Lab, The OHIO State University
Email: dr.eslam.yahya@gmail.com